

Amendments to the Specification:

In response to the Official Action and in accordance with 37 CFR 1.121(c), please enter the following rewritten paragraphs from the specification of the instant application.

[0001] This application is a continuation-in-part of U.S. Letters Patent 6,646,556 ~~application serial number 09/591,887~~, filed on June 9, 2000, the disclosure of which is incorporated herein by reference.

[0008] General information relating to mats for use in patient monitoring may be found in U.S. Letters Patent 6,307,476 ~~patent application 09/285,956~~ filed April 2, 1999 the disclosure of which is specifically incorporated herein by reference. Additionally, U.S. Letters Patent Nos. 4,179,692, 4,295,133, 4,700,180, 5,600,108, 5,633,627, 5,640,145, and 5,654,694 (concerning electronic monitors generally) contain further information generally pertinent to this same subject matter, as do U.S. Letters Patent 4,484,043, 4,565,910, 5,554,835, and 5,623,760 (switch patents), and U.S. Patent application Nos. 09/591,887 and 60/487,021 (mats for use in preventing decubitus ulcers) the disclosures of all of which are all incorporated herein by reference.

[0014] On the other hand, if the patient demonstrates a significant change in position prior to the expiration of the predetermined time period, the microprocessor in the electronic monitor will note that fact and reset the timer, preferably to its initially specified time interval. This change in position may or may not be accompanied by the sending of a signal to the care-

giving staff to inform them of that fact. The microprocessor will then continue to monitor monitor's the patient's position via the sensor until either the current time period expires or the patient moves significantly again.

[0023] According to a further embodiment, there is provided an electronic monitor as described above, but wherein the electronic monitor begins to sound a local warning a predetermined amount of time before it signals the nurses' station. That is, in the preferred variation of this embodiment the electronic monitor might begin to make a relatively unobtrusive noise such as a chirp or beep (say) five minutes before the nurses' station was to be notified. This noise might be enough to rouse the patient so as to cause him or her ~~to~~ turn without assistance. In other variations, the monitor, instead of broadcasting some sort of noise in an effort to rouse the patient, might cease its broadcast of soothing sounds (e.g., white noise or music) some length of time minutes before the turn alarm activates (e.g., 10 minutes before), to see if such a cessation would rouse the patient. Of course, combinations of these two approaches (ceasing the broadcast of soothing sounds and beginning to broadcast more intrusive sounds) could certainly also be utilized to advantage. On the other hand, if the patient does not move at the predetermined time the nurses' station will be signaled. The instant embodiment has the advantage of helping patients to learn to turn themselves, while increasing the quality of their sleep by reducing the number of times the staff must wake and move them.

[0059] Turning to another aspect of the instant invention, there is provided an electronic monitor substantially as described above, but wherein a pre-alarm signal is initiated locally at the monitor **50** beginning some predetermined period of time before the turn interval expires. In-

~~more particular, it is anticipated that in~~ In some instances it might be desirable to have the monitor 50 begin to sound some sort of "alarm" before the expiration of the turn interval, thereby encouraging to encourage the patient to move on his or her own. The patient, if he or she is in a condition to hear and respond to the sound, will be thereby encouraged to move to a new position so that it will not be necessary for the staff to manually relocate him or her. In the preferred embodiment, the sound that is generated will be a ~~relative~~ relatively unobtrusive noise such as a "chirp" or low "beep", a sound that would be sufficient to notify an "alert" patient but that would not unduly disturb a resting patient and that would not disturb patients in adjoining beds or rooms. Preferably, the alarm will come from a speaker 395 which has been made a part of the monitor 50. Of course, many alternative arrangements are possible, including having the pre-turn alert come from a remote speaker. This alert could also take the form of a flashing light or other standard signaling mechanisms, however preferably sound will be used. Optionally, the volume of the alarm could be increased as the time to call the nurse draws closer.

[0074] In another preferred embodiment, the lights 1242 will be chosen to be different colors and some form of spectrographic analysis will be employed to determine how much of the mat is compressed and the patient's location. Those of ordinary skill in the art will recognize that if each of the light sources 1242 is chosen to be a different color it is readily possible to automatically determine which is "visible" from each end of the mat. Conventional spectrographic analysis, though expensive, would be one approach. In another more cost effective approach, a plurality of conventional photoelectric cells might be used, each of which would be made to be sensitive to a narrow band of light frequencies by, for example, covering

each with a color filter or lens. In either case, the goal is to determine which frequencies are present in the light 1244 / 1246 that is emitted from the mat 1216. Given a knowledge of the location and color of each lights in the mat, nearest point of contact by the patient to each end of the mat can be readily determined.

[0081] As still a further example of the sort of sensors that would be suitable for use with the instant invention, there is provided an arrangement wherein ~~stain~~ strain gages or similar devices to measuring the deformation of a structural member of a bed are utilized to determine at least an approximate location of the patient in the bed so that a determination can be made as to whether or not the patient has recently moved significantly. As is generally illustrated in Figure 13A, one or more strain gages 1310 are preferably affixed to a structural member of the bed 80. According to the instant example, a horizontal bed mattress support member has been utilized although those of ordinary skill in the art will recognize that many other variations are certainly possible including, by way of example, positioning strain gages on the frame of a wheelchair 30 so as to monitor the weight distribution within of the chair.

[0085] Note that the amount of deformation in the bed support member 80 as measured at the location of maximum deflection could be on the order of a few ~~thousands~~ thousandths of an inch depending on the stiffness of the materials from which it is made. However, modern strain gages are easily capable of sensing such — and even smaller — deviations.